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The Subprime Crisis and the Link between Consumer Financial Protection and Systemic Risk

*Erik F. Gerding**

This Article argues that the current global financial crisis, which was first called the “subprime crisis,” demonstrates the need to revisit the division between financial regulations designed to protect consumers from excessively risky loans and safety-and-soundness regulations intended to protect financial markets from the collapse of financial institutions. Consumer financial protection can, and must, serve a role not only in protecting individuals from excessive risk, but also in protecting markets from systemic risk. Economic studies indicate it is not merely high rates of defaults on consumer loans, but highly correlated defaults that create risks for lenders and investors in asset-backed securities. Consumer financial regulations can mitigate these risks.

The Article argues:

- “predatory lending” can constitute a collective action failure by lenders;
- consumer behavioral biases may frustrate attempts to mitigate risk to purchasers of asset-backed securities that focus solely on improving information on the risks of underlying consumer loans; but,
- consumer financial rules that take into account these biases and address the “menu design” of consumer loan choices may not only protect consumers, but make the risks of consumer defaults more predictable.

The Article also draws tentative conclusions on the implications of the link between consumer protection and systemic risk for the institutional reform of financial regulation by:

- suggesting that a diverse set of regulators may remedy high correlations of consumer lending practices and the risks posed by highly correlated consumer default; and

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- arguing against federal preemption of state consumer regulation.

I. INTRODUCTION

There has been a historical division in financial regulation between regulations designed to protect consumers and regulations intended to protect financial markets from the collapse of financial institutions. This Article argues that the current global financial crisis, which was first called the “subprime crisis,” demonstrates the need to revisit this division. More particularly, this Article argues that consumer financial protection can, and must, serve a role not only in protecting individuals from excessive risk, but also in protecting markets from systemic risk. This additional role for consumer financial protection provides additional, novel support for promoting vigorous and diverse consumer regulations.

This Article defines consumer financial protection laws and regulations as legal rules designed to prevent individual borrowers from taking on excessive risk.¹ These rules address lending practices that are sometimes labeled as unfair, abusive, or predatory, and are often justified on efficiency grounds.² For example, consumer financial protection laws may address either information asymmetries that prevent consumers from understanding

¹ See Oren Bar-Gill & Elizabeth Warren, *Making Credit Safer*, 157 U. PA. L. REV. 1 (2008) (proposing a new financial regulator to protect consumers from risk posed by credit products). Consumer financial law covers a broad range of concerns, many of which lie beyond the scope of this Article. For example, this Article does not address financial laws or regulations intended to:

- ensure wide consumer access to credit (including regulations that either combat racial discrimination by lenders that denies consumers credit or address the fairness of private credit reports on consumers);
- govern consumer banking and payment transactions;
- address debt collection or foreclosure practices; or
- regulate consumer bankruptcy.

Nevertheless, lender practices in these areas might also contribute to the phenomenon that is the subject of this article – excessive consumer defaults that threaten the solvency of financial institutions. More particularly, this Article focuses on consumer credit products and consumer lending practices that lead to a high level of market-wide consumer defaults that are both unpredictable and highly correlated. See *infra* notes 53-62 and accompanying text.

² E.g., Kathleen C. Engel & Patricia A. McCoy, *A Tale of Three Markets: The Law and Economics of Predatory Lending*, 80 TEX. L. REV. 1255 (2002) (arguing that predatory lending represents a market failure).

the risk of a particular loan,³ or behavioral biases and cognitive limitations that cause consumers to act against their long-term self interest.⁴

As Part II.B explains, a separate set of financial laws and regulations address systemic risk. Scholars have defined systemic risk as the risk of market-wide losses or the breakdown of financial markets.⁵ Because systemic risk threatens the entire market, diversification does not adequately protect investors.⁶ To address systemic risk, financial regulations focus on the “safety and soundness” of financial institutions.⁷ By ensuring the financial health of institutions, systemic risk regulations attempt to protect financial markets from the collapse of a significant institution.⁸

There is a tension between the objectives of protecting consumers and ensuring the financial health of individual financial institutions. As Professor Adam Levitin notes, lending practices that extract additional value from consumers strengthen the balance sheets of lenders.⁹ This means that efforts to clamp down on lending practices to protect consumers could adversely impact the finances of financial institutions.

But, there is little empirical evidence that consumer protection efforts have ever threatened the stability of a financial institution to a degree that increases systemic risk. In fact, this Article argues that consumer financial protection is not antithetical to, but, in fact, represents a critical tool in mitigating systemic risk. When widespread consumer credit products or lending practices induce high levels of consumer default, the safety and sound-

³ E.g., Bar-Gill & Warren, *supra* note 1, at 5 (arguing that market for consumer credit fails when consumers are not optimally informed); Elizabeth Renuart & Diane E. Thompson, *The Truth, the Whole Truth, and Nothing but the Truth: Fulfilling the Promise of Truth in Lending*, 25 YALE J. ON REG. 181, 181-82 (2008) (noting that Truth in Lending Act was intended to address information asymmetries that prevented consumers from understanding loan terms).

⁴ E.g., Lauren E. Willis, *Decisionmaking and the Limits of Disclosure: The Problem of Predatory Lending: Price*, 65 MD. L. REV. 707 (2006) (using theories from behavioral economics to explain predatory lending).

Many consumer financial protection laws are also plainly grounded in paternalism. Cf. Joshua D. Wright, *Behavioral Law and Economics, Paternalism, and Consumer Contracts: an Empirical Perspective*, 2 N.Y.U. J.L. & LIBERTY 470 (2007) (challenging empirical foundations of behavioral critiques of consumer credit markets).

⁵ George G. Kaufman & Kenneth E. Scott, *What is Systemic Risk, and Do Bank Regulators Retard or Contribute to It*, 7 INDEP. REV. 371, 371 (2003) (defining systemic risk as “the risk of a breakdown in an entire system, as opposed to breakdowns in individual parts or components”). See also Steven L. Schwarcz, *Systemic Risk*, 97 GEO L.J. 193 (2008).

⁶ Schwarcz, *supra* note 5, at 200.

⁷ See Adam Feibelman, *Commercial Lending and the Separation of Banking and Commerce*, 75 U. CIN. L. REV. 943, 967 (2007) (equating banking law concerns with “safety and soundness” of banks with systemic risk).

⁸ Kaufman & Scott, *supra* note 5, at 372, 385 (discussing regulations designed to prevent chain failures of financial institutions).

⁹ Adam Levitin, *Hydraulic Regulation: Regulating Credit Markets Upstream*, 26 YALE J. REG. ____ (forthcoming 2009).

ness of financial institutions can be threatened.¹⁰ Systemic risk can thus arise when consumer defaults threaten either one important financial institution (and that failure, in turn, threatens other institutions) or a number of institutions simultaneously.¹¹

Both pathways to systemic risk point to a need to refine when consumer default can lead to market-wide losses; it is not merely a high incidence of consumer default that poses systemic risk. Instead, systemic risk becomes a problem when the level of consumer default exceeds the predictions of financial institutions and when these consumer defaults are highly correlated. If financial institutions underestimate consumer defaults, they cannot manage risk effectively.¹² Risk management is similarly frustrated by highly correlated consumer defaults; high correlation of defaults within a financial institution's portfolio undermines diversification as defaulting loans are not offset by loans that continue to repay.¹³ High correlation of defaults across a market means that multiple financial institutions face losses at the same time.¹⁴ The securitization of consumer loans both makes predicting the consequences of consumer default much more difficult¹⁵ and increases the dangers of high default correlations;¹⁶ securitization thus mag-

¹⁰ Professor Levitin recognizes this potential confluence.

¹¹ These two potential links between consumer default and systemic risk correspond with two of the pathways for systemic risk described by Professors Kaufman and Scott. Among the three ways that systemic risk can arise, include a failure of one important institution leading to a chain reaction of failures by other inter-connected institutions and failures by multiple institutions that arise from an external "shock" and "similarities in third-party risk exposures" among those institutions. Kaufman & Scott, *supra* note 5, at 372-73.

¹² If a financial institution could adequately measure the risks posed by consumer defaults either directly to the institution itself or indirectly to the institution's counterparties, then the institution could hedge appropriately. See Erik F. Gerding, *The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis*, 84 WASH. L. REV. (forthcoming 2009) (analyzing challenges faced by financial institution risk models in measuring impact of defaults on underlying mortgages on asset-backed securities).

¹³ *Id.* See also Joshua D. Coval et al., *The Economics of Structured Finance*, 23 J. ECON. PERSP. 3 (2009) (describing how correlation among losses on underlying assets undermines efficient risk spreading in securitization and can lead to severe errors in estimating losses on asset-backed securities); Eva Porras, *The Role of Correlation in the Current Credit Ratings Squeeze* (IE Business School, Working Paper No. WP08-10, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1134488 (analyzing role of default correlations in subprime portfolios in wave of ratings downgrades of asset-backed securities in current crisis); Adrian M. Cowan & Charles D. Cowan, *Default Correlation: an Empirical Investigation of a Subprime Lender*, 28 J. BANKING & FIN. 753 (2004) (finding high default correlation in portfolio of single subprime lender studied).

¹⁴ See Kaufman & Scott, *supra* note 5, at 373 (describing systemic risk arising from financial institutions with correlated exposures to third-party defaults); cf. Mark Carey, *Dimensions of Credit Risk and their Relationship to Economic Capital Requirements*, PRUDENTIAL SUPERVISION: WHAT WORKS AND WHAT DOESN'T (Frederic S. Mishkin ed., 2001) (detailing how errors in assumption on credit risk correlations in financial risk models that would be used to set regulatory capital under Basel Accords may lead to significant errors).

¹⁵ See Gerding, *supra* note 12.

¹⁶ Coval et al., *supra* note 13.

nifies the consequences for systemic risk of consumers taking on excessively risky loans.¹⁷

The current financial crisis, which started with subprime mortgages and spread to financial institutions that held securities backed by those mortgages,¹⁸ provides stark evidence of the link between the failure of consumer financial protection and threats to entire financial markets. Just before the crisis, U.S. bank regulators began to recognize the possible risks posed by subprime lending and securitization to the safety and soundness of financial institutions,¹⁹ but the severity of the financial crisis shows that regulators need to move beyond baby steps and redouble efforts to address systemic risk through consumer protection.

This Article proceeds as follows: Part II sketches the basic division in U.S. financial regulation between laws designed to protect consumers and those designed to mitigate systemic risk; Part III describes the rise of subprime lending, particularly subprime mortgage lending,²⁰ and how the securitization fueled that rise;²¹ Part III underscores the risks posed by highly correlated consumer defaults in subprime markets and also provides a brief explanation of how the financial crisis started with defaults in subprime mortgages and spread to financial institutions;²² Part IV argues that the current financial crisis demonstrates the need to enlist consumer financial protection in efforts to mitigate systemic risk and that policies based on improving the “menu design” of consumer borrowing options can prove par-

¹⁷ Cf. Rob Nijskens & Wolf Wagner, Credit Risk Transfer Activities and Systemic Risk: How Banks Became Less Risky Individually but Posed Greater Risks to the Financial System at the Same Time (Dec. 23, 2008) (unpublished manuscript) *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1319689 (positing that credit risk transfers by financial institutions, including via securitization, counterintuitively may increase systemic risk by making bank risk profiles more correlated with one another).

¹⁸ See *infra* Part III (provides a thumbnail sketch of the beginnings of the current global financial crisis in the subprime mortgage market).

¹⁹ See Engel & McCoy, *supra* note 2, at 1290-91. As Professors Engel and McCoy note, “In January 2001, federal banking regulators increased the capital requirements for all institutions with subprime lending programs that equaled or exceeded 25% of their tier one regulatory capital.” *Id.* at 1291, n.155 (citing BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM ET AL., EXPANDED GUIDANCE FOR SUBPRIME LENDING PROGRAMS 2, 5-6 (2001)). However, it is unclear how diligently bank examiners followed this examination guidance.

Professors McCoy and Engel also note that regulators proposed several rules that would require subprime lenders to collect data on their loans or mortgages. Engel & McCoy, *supra* note 2, at 1291, n.155. Finally, bank regulators issued interagency guidance on capital requirements for financial institutions to cover risks posed by asset-backed securities held by those institutions. *Id.* (citing Federal Reserve System, Risk-Based Capital Guidelines, Capital Adequacy Guidelines, Capital Maintenance, Capital Treatment of Recourse, Direct Credit Substitutes and Residual Interests in Asset Securitizations, 66 Fed. Reg. 59, 614 (Nov. 29, 2001) (codified at 12 C.F.R. pt. 225)).

²⁰ See *infra* Part III.A.

²¹ See *infra* Parts III.B (describing the mechanics of securitization) and III.C (describing how securitization fueled subprime lending).

²² See *infra* Part III.C.

ticularly valuable in fighting systemic risk;²³ Part V analyzes the implications of employing consumer financial protection law as a tool to mitigate systemic risk for the current debate over reorganizing financial regulators; and Part VI concludes.

II. THE DIVIDE BETWEEN CONSUMER FINANCIAL PROTECTION AND REGULATIONS ON SYSTEMIC RISK

The current structure of financial regulation treats the protection of consumers from unfair lending practices and the protection of financial markets from systemic risk as two distinct objectives. This division appears both in different statutory and regulatory frameworks and in the allocation of responsibility among and within different financial regulators. The following paragraphs provide just a sketch of this division.

A. Consumer Protection

An array of federal and state laws addresses protecting consumer borrowers from abusive, unfair or predatory lending practices. A basic distinction can be made between laws that regulate the substance of the consumer loan terms and those that require that lenders make certain disclosure to consumers. Substantive regulation of consumers has its origins in usury statutes, which survive in state law.²⁴ (But scholars have noted a dilution in state usury prohibitions, due in part to the Supreme Court's decision in *Marquette National Bank*,²⁵ which permits national banks to export the usury law of the states in which they are chartered.²⁶ This decision encouraged both lenders to relocate to states with higher or no interest rate ceilings and states to dilute their usury laws, phenomena some scholars have described as a "race-to-the bottom."²⁷ Moreover, state interest rate caps were preempted by the Depository Institutions Deregulation and Monetary Con-

²³ See *infra* Part IV.F.

²⁴ Christopher L. Peterson, *Usury Law, Payday Loans, and Statutory Sleight of Hand: Salience Distortion of American Credit Pricing Limits*, 92 MINN. L. REV. 1110, 1116-22 (2008) (surveying historical development of state usury laws in the United States through the present).

²⁵ *Marquette Nat'l Bank v. First of Omaha Serv. Corp.*, 439 U.S. 299 (1978).

²⁶ *Id.* at 318-19. See Michael S. Barr, *Banking the Poor*, 21 YALE J. ON REG. 121, 148 (2004) (analyzing how banks have been able to export the usury law of the state in which they are chartered because of *Marquette* decision). Professor Barr also notes that regulations of the Office of the Comptroller of the Currency that assert federal preemption of state consumer protection laws have built on the *Marquette* decision. *Id.*

²⁷ Christopher L. Peterson, *Federalism and Predatory Lending: Unmasking the Deregulatory Agenda*, 78 TEMP. L. REV. 1, 35-37 (2005). See also Elizabeth R. Schlitz, *The Amazing, Elastic, Ever-Expanding Exportation Doctrine and its Effect on Predatory Lending Regulation*, 88 MINN. L. REV. 518 (2004).

trol Act,²⁸ a statute that was critical in spurring the growth of subprime lending.²⁹

Federal consumer financial protection focuses primarily on required disclosure to consumers of the lending terms. Most notably, the Truth in Lending Act³⁰ and related federal regulations³¹ set forth detailed standards for disclosures by lenders in consumer credit transactions.

B. Systemic Risk

Federal and state regulations of banks and other financial institutions address systemic risk by limiting risk-taking by those institutions. Systemic risk regulations include regulations that focus on the “safety and soundness” of banks and other financial institutions (e.g., insurance companies) whose collapse may have broad spillover effects on financial markets.³² These risk regulations fall into several broad categories, including the following:

- regulations that limit financial institutions to particular lines of business to shield them from excessive losses and to allow regulators to better assess the risks that the institutions face;³³
- restrictions on the types of investments that financial institutions may make, which include prohibitions on investments in real estate³⁴ and riskier classes of securities, such as equity;³⁵
- prudential restrictions on the number of loans to certain types of borrowers;³⁶ and
- capital requirements for financial institutions.³⁷

²⁸ Pub. L. No. 96-221, 94 Stat. 132 (codified as amended in scattered sections of 12 U.S.C.).

²⁹ Souphala Chomsisengphet & Anthony Pennington-Cross, *The Evolution of the Subprime Mortgage Market*, 88 FED. RESERVE BANK OF ST. LOUIS REV. 31, 38 (Jan./Feb. 2006), available at <http://research.stlouisfed.org/publications/review/06/01/ChomPennCross.pdf>.

³⁰ 15 U.S.C. §§ 1601 et seq. (2008).

³¹ Regulation Z, 12 C.F.R. § 226 (2008).

³² See Feibelman, *supra* note 7, at 967.

³³ E.g., 12 U.S.C. § 24 (2008) (enumerating powers of national banks).

³⁴ E.g., 12 U.S.C. § 29 (2008) (restricting ability of national banks to invest in real estate).

³⁵ E.g., 12 U.S.C. § 24 (2008) (specifying categories of securities investments which national banks are permitted to make).

³⁶ For example, federal banking laws limit the loans that banks may have outstanding to one borrower. 12 U.S.C. §§ 84, 1464(u) (2008); 12 C.F.R. § 32.1(b) (2008). Another set of laws restrict a bank's loans to other depository institutions to prevent the collapse of one institution from threatening others. 12 U.S.C. § 371b-2 (2008); 12 C.F.R. § 206 (2008).

³⁷ Requiring that institutions maintain a certain amount of capital to match the risks on their balance sheet ensures that they have a cushion against losses that would push the institutions towards insolvency and threaten their depositors, creditors, and other institutions. Capital requirements are a centerpiece of federal banking regulation. E.g., 12 U.S.C. § 1831(o)(c)(1) (requiring federal bank regulators to establish capital requirements for supervised banks). But capital requirements also feature

These regulations are buttressed by the general powers of a regulator to inspect financial institutions for safety and soundness³⁸ and to revoke an institution's license, assume control of its operations, or shut it down if the regulator finds concerns.³⁹ Deposit insurance and other government guarantees of financial institutions provide yet another backstop against systemic risk by mitigating the threat of bank runs.⁴⁰ Yet, the moral hazard created by this insurance means that the regulators providing the backstop must actively use other regulations to restrict excessive risk-taking.⁴¹ Finally, central banks attempt to mitigate systemic risk by serving as lenders of last resort.⁴²

C. When a Regulator Has Both a Consumer Protection and Systemic Risk Mission

A number of banking regulators have both consumer protection and systemic risk mitigation (safety and soundness) in their statutory missions. But, as Professor Levitin argues, these missions can conflict.

[T]he safety-and-soundness mission is incompatible with consumer protection because practices that might be profitable and thus increase banks' safety-and-soundness might also be profitable and thus increase banks' safety-and-soundness might also be abusive and unfair to consumers. For example, banks might not engage in the most strenuous anti-fraud practices because it might not be as profitable as al-

regulation of other types of financial institutions. For example, the SEC imposes capital requirements on registered broker-dealers. Net Capital Requirements for Brokers or Dealers, 17 C.F.R. § 240.15c3-1 (2009).

³⁸ E.g., 12 U.S.C. § 4517 (2008) (mandating annual examination of government sponsored entities for safety and soundness). See also Tamar Frankel, *Regulating the Financial Markets by Examinations*, (B. U. Sch. L. Working Paper No. 09-08, 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1339913 (arguing that securities regulators should use regulatory examinations similar to safety and soundness examinations by federal bank regulators to mitigate the risk of asset price bubbles and financial market crashes).

³⁹ E.g., 12 U.S.C. § 1831p-1 (2008) (requiring federal bank regulators to set safety-and-soundness standards for insured depository institutions); § 1818 (setting standards for termination of deposit insurance status); § 1831o (setting standards for "prompt corrective action" by insured depository institutions). See also Frankel, at *supra* note 38.

⁴⁰ See Schwarcz, *supra* note 5, at 210. But cf. Kaufman & Scott, *supra* note 5, at 381 (arguing that deposit insurance is unnecessary and counterproductive in mitigating systemic risk).

⁴¹ RIK W. HAFFER, *THE FEDERAL RESERVE SYSTEM: AN ENCYCLOPEDIA* 270-71 (2005) (analyzing potential moral hazard created by deposit insurance). For a few of the statutory provisions that address moral hazard with respect to insured institutions, see *supra* note 39.

⁴² For an economic analysis of this lender of last resort role and the concept of systemic risk in general, see Olivier De Bandt & Phillip Hartmann, *Systemic Risk in Banking: a Survey*, in *FINANCIAL CRISES, CONTAGION, AND THE LENDER OF LAST RESORT* 249, 260 (Charles Goodhart & Gerhard Illing eds., 2002).

lowing a certain level of fraud. . . . Safety-and-soundness and consumer protection would thus push for different regulatory outcomes.⁴³

He further argues that, faced with this conflict, bank regulators often give priority to protecting against systemic risk.

Placing the two missions together in a single agency ensures that one will trump the other, and historically consumer protection has not won out. . . . Federal banking regulators have the authority to regulate for consumer protection, but are not motivated to do so, in part because of its conflict with their safety-and-soundness mission. . . .⁴⁴

Professor Levitin acknowledges that there may be an alignment between consumer protection and safety-and-soundness missions because excessive defaults may threaten financial institutions.⁴⁵

Nevertheless, Professor Levitin maintains that the potential conflict between the two missions explains why federal bank regulators have either refrained from fully enforcing consumer protection laws and regulations in their mandate or, in some cases, actively worked to roll back consumer protection laws. As an example of a regulator that both failed to enforce and actively undermined consumer protection laws, Professor Levitin cites the Office of the Comptroller of the Currency (OCC). In particular, he faults the Comptroller of the Currency for asserting that federal banking laws preempt state consumer financial protections.⁴⁶ (The OCC won a major victory in its efforts to preempt state consumer regulations, in 2007, when the Supreme Court ruled in *Watters v. Wachovia Bank*⁴⁷ that state regulation of a state-chartered mortgage subsidiary of a national bank was preempted by the National Bank Act.⁴⁸).

⁴³ Levitin, *supra* note 9, at 19. Professor Levitin explains that the interests of banks and investors in preventing fraud may diverge with the following economic analysis: From a bank's perspective, there is an optimal level of fraud, which is not zero. "After a certain point, the cost of preventing the marginal fraud outweighs its benefit. From a safety and soundness perspective, a bank should not overinvest in anti-fraud security. But from a consumer perspective, the optimal level of fraud is likely zero, especially if consumers bear the risk of fraud loss." *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*, n.58. Levitin notes, however, that this alignment may no longer exist. First, banks no longer bear the risk of excessive defaults on consumer loans when they sell those loans to securitization vehicles. Second, defaults on some loans, such as credit card debt, generate profits for banks through penalties. *Id.* (citing Ronald J. Mann, *Bankruptcy Reform and the "Sweatbox" of Credit Card Debt*, 2007 U. ILL. L. REV. 375).

⁴⁶ See Levitin, *supra* note 9.

⁴⁷ 550 U.S. 1 (2007).

⁴⁸ See Elizabeth R. Schiltz, *Damming Watters: Channeling the Power of Federal Preemption of State Consumer Banking Laws*, 35 FLA. ST. U. L. REV. 893 (2008) (criticizing *Watters* as part of larger legal movement to preempt state banking regulation). But, perhaps, the most important milestone in federal preemption occurred in 1980, when the Depository Institutions Deregulation and Monetary Control Act of 1980 preempted state interest rate caps; this legislation represented a critical piece in the

Scholars have echoed Professor Levitin's analysis⁴⁹ and noted that other federal banking regulators that have both consumer protection and safety and soundness missions have emphasized the latter mission at the expense of the former.⁵⁰

III. SUBPRIME LENDING, SECURITIZATION AND THE START OF THE CRISIS

A. The Rise of Subprime Mortgage Lending

The subprime crisis revealed the dangers in separating consumer financial protection from addressing systemic risk. As detailed below, the crisis began with consumer defaults on so-called subprime mortgages. "Subprime mortgages" can have several definitions, but are often distinguished from "prime" mortgages by significantly higher upfront and continuing costs (including fees and interest rate payments) due to the lower creditworthiness of the borrowers.⁵¹ The last fifteen years witnessed a boom in subprime mortgage lending.⁵²

Many of the mortgages offered to subprime borrowers (and offered to other borrowers) had complex interest rate features. A notable category of these complex mortgages, adjustable rate mortgages ("ARMs"), offered buyers low fixed rates on an introductory or "teaser" basis, with interest rates converting to a floating, market-based interest rate after a few years.⁵³

ARMs and other "exotic" mortgages would cost borrowers substantially more over the life of the mortgages than fixed rate mortgages.⁵⁴ ARMs

beginning of the subprime mortgage market. See Todd J. Zywicki & Joseph D. Adamson, *The Law and Economics of Subprime Lending*, 80 U. COLO. L. REV. 1, 6 (2009).

⁴⁹ Bar-Gill & Warren, *supra* note 1, at 90-95.

⁵⁰ *Id.* at 94-95 (criticizing Federal Reserve's poor performance in consumer protection due to focus on safety and soundness mission); Heidi Mandanis Schooner, *The Role of Central Banks in Bank Supervision in the United States and the United Kingdom*, 28 BROOK. J. INT'L L. 411, 427 (2003) (commenting on Federal Reserve prioritizing safety and soundness).

⁵¹ Chomsisengphet & Pennington-Cross, *supra* note 29, at 32. These costs can be broken down as follows:

Upfront costs include application fees, appraisal fees, and other fees associated with originating a mortgage. The continuing costs include mortgage insurance payments, principle and interest payments, late fees and fines for delinquent payments, and fees levied by a locality (such as property taxes and special assessments). *Id.*

Other definitions of subprime loans focus on lower creditworthiness of borrowers as measured by lower credit rating scores. E.g. Gary Gorton, *The Subprime Panic*, (Yale ICF Working Paper No. 08-25, 2 Sept. 30, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1276047.

⁵² See Chomsisengphet & Pennington-Cross, *supra* note 29, at 36-40.

⁵³ Patricia A. McCoy, *Rethinking Disclosure in a World of Risk-based Pricing*, 44 HARV. J. ON LEGIS. 123, 144 (2007). See also Oren Bar-Gill, *The Law, Economics, and Psychology of Subprime Mortgage Contracts*, 94 CORNELL L. REV. (forthcoming 2009) (positing that the two defining features of subprime mortgage contracts are cost deferral for borrowers and complexity in terms).

⁵⁴ See Bar-Gill, *supra* note 53. The costs to consumers of ARM loans were recognized in legal scholarship over two decades ago. E.g., William N. Eskridge, Jr., *One Hundred Years of Ineptitude: The*

also meant that borrowers bore significant interest rate risk; if interest rates increased after the teaser period expired, then the required interest payments would rise, potentially beyond the ability of the borrower to repay.⁵⁵ Rising market interest rates would also foreclose the ability of the borrower to refinance or sell the house for more than the value of the mortgage (as higher interest rates would decrease the number of buyers in the market).⁵⁶

The dramatic increase in the lending of these more complex mortgages coincided with a boom in other forms of consumer lending, such as credit card products, both to subprime borrowers and more creditworthy individuals.⁵⁷ Many of these other credit products also contained complex terms, which allowed lenders to reset interest rates or charge various “hidden” fees and penalties.⁵⁸

Consumer law scholars have argued that mortgage and other consumer lenders used the complexity of ARMs and consumer credit products to shift interest rate risk to, and extract additional revenue from, consumers.⁵⁹ These scholars argued lenders exploited not only informational asymmetries, but the behavioral biases of consumers as well.⁶⁰ Consumers make many decisions in a manner inconsistent with the rational actor models of neoclassical economics, these scholars contend; instead, consumers exhibit cognitive limitations and take mental shortcuts that cause them to miscalculate financial risks.⁶¹ According to these scholars, these behavioral biases caused consumer borrowers to agree to provisions in mortgages and other consumer debt contracts that they otherwise might not have.⁶²

B. Securitization

Consumer lending came to have a more direct effect on capital markets because of the advent of securitization. Securitization also means that

Need for Mortgage Rules Consonant with the Economic and Psychological Dynamics of the Home Sale and Loan Transaction, 70 VA. L. REV. 1083, 1131 (1984).

⁵⁵ See Bar-Gill, *supra* note 53.

⁵⁶ See *id.*

⁵⁷ For a discussion of rising levels of consumer debt, see Teresa A. Sullivan, *Less Stigma or More Financial Distress: An Empirical Analysis of the Extraordinary Increase in Bankruptcy Filings*, 59 STAN. L. REV. 213, 229-32 (2006); TERESA A. SULLIVAN ET AL., *THE FRAGILE MIDDLE CLASS: AMERICANS IN DEBT* (2000).

⁵⁸ See Bar-Gill & Warren, *supra* note 1, at 26-53 (analyzing market failures in consumer credit products other than mortgages).

⁵⁹ See Bar-Gill, *supra* note 53.

⁶⁰ See *id.*

⁶¹ See Willis, *supra* note 4, at 754-804 (cataloging behavioral biases afflicting mortgage borrowers).

⁶² See Bar-Gill, *supra* note 53; Bar-Gill & Warren, *supra* note 1, at 26-53 (analyzing market failures in consumer credit products other than mortgages). For other recent scholarship on the effects of behavioral biases on real estate investments, see Lee Anne Fennell, *Homeownership 2.0*, 102 NW. U. L. REV. 1047 (2008); Markus K. Brunnermeier & Christian Julliard, *Money Illusion and Housing Frenzies*, 21 REV. FIN. STUD. 135 (2008).

risks inherent in consumer lending translate more directly into systemic risk.

Securitization represents a process by which loans, mortgages, and other credit products that generate predictable future cash streams from borrowers are pooled together and sold to an investment vehicle that then issues securities to investors.⁶³ The proceeds from the sale of the securities fund the purchase of the loan pool by the investment vehicle.⁶⁴ The asset-backed securities issued in a securitization are often themselves pooled and securitized; this re-securitization of asset-backed securities can, and has been, repeated many times over in an iterative fashion.⁶⁵

Lenders benefit from securitization in several ways. First, they can convert long-term assets (such as mortgages) into short-term, extremely liquid assets (i.e., cash). This can help address a mismatch that many lenders face between short-term liabilities and long-term assets, thereby addressing a concern of both investors and regulators.⁶⁶ Second, lenders can then channel the cash into new loans and increase their returns on capital.⁶⁷ Third, lenders can earn fees paid by the investment vehicle for continuing to collect and enforce the loans on behalf of the vehicle ("servicing fees").⁶⁸ Fourth, lenders use securitization to mitigate and diversify against credit risk. By selling a portion of the loans they make, the lenders mitigate the risk that they face of default on those loans, risk which might be overly concentrated in certain geographic areas or market segments.⁶⁹

Securitization thus provides a mechanism to spread risks from lenders to investors; through securitization, lenders offload credit risk from mortgages, credit card debts, student loans and other credit products to purchasers of asset-backed securities.⁷⁰ Investors have been willing to bear these risks because securitization offers both the rewards of investing in lucrative consumer credit markets and the opportunity to diversify against risks.⁷¹

⁶³ For a primer on securitizations, see Steven L. Schwarcz, *The Alchemy of Asset Securitization*, 1 STAN. J.L. BUS. & FIN. 133, 135 (1994).

⁶⁴ See *id.*

⁶⁵ See Leon T. Kendall, *Securitization: A New Era in American Finance*, in A PRIMER ON SECURITIZATION 1, 15 (Leon T. Kendall & Michael J. Fishman eds., 1997); Coval et al., *supra* note 13 (describing "CDO Squared" securitizations).

⁶⁶ See MOORAD CHOUDHRY, CORPORATE BONDS AND STRUCTURED FINANCIAL PRODUCTS 297-300 (2004).

⁶⁷ See Simon Wolfe, *Structural Effects of Asset-Backed Securitisation*, 6 EUR. J. FIN. 353 (2000).

⁶⁸ CHARLES AUSTIN STONE & ANNE ZISSU, THE SECURITIZATION MARKETS HANDBOOK: STRUCTURES AND DYNAMICS OF MORTGAGE AND ASSET-BACKED SECURITIES 45 (2005).

⁶⁹ See CHOUDHRY, *supra* note 66, at 300.

⁷⁰ See Ronald J. Gilson & Charles K. Whitehead, *Deconstructing Equity: Public Ownership, Agency Costs, and Complete Capital Markets*, 108 COLUM. L. REV. 231 (2008) (describing risk spreading functions of CDOs, a type of securitization, and other financial instruments).

⁷¹ See CHOUDHRY, *supra* note 66, at 300.

An investor in asset-backed securities can diversify against the credit risk of consumer mortgages and other loans in three different ways. First, the pooling of loans means that the risk of default on any one loan is offset by the payments on non-defaulted loans. Second, securitization facilitates diversification because a purchaser of an asset-backed security is only purchasing a piece of the risk of the mortgage pool. An investor can diversify by balancing the other investments in its portfolio. Third, and in a related vein, an investor can more finely tune the amount of risk in any investment in asset-backed securities because these securities are often issued in different classes or tranches. Each tranche has a different priority in rights to payments on the underlying loans, with senior tranches receiving payments before junior classes are paid. Each tranche of a securitization thus offers a different tradeoff between risk and interest rates (reward).⁷²

But, the success of diversification (and the efficiency of risk spreading through securitization) rests on several assumptions. Among these assumptions is that the models used to price asset-backed securities adequately measure the risks posed by the underlying loans.⁷³ Furthermore, diversification depends on a low, constant, and predictable degree of correlation of losses on underlying loans.⁷⁴ Again, diversification depends in part on losses from a default on some loans being offset by continued payments on other loans. When defaults are highly correlated, it no longer rains, it pours.

High default correlations on the assets underlying a securitization can create extreme volatility in the losses to asset-backed securities and lead to serious underestimation of risk.⁷⁵ Studies have shown that individual subprime lenders have high correlations of default in their loan portfolios⁷⁶ and that defaults among subprime borrowers are highly correlated (while de-

⁷² See Gerding, *supra* note 12.

⁷³ See *id.*

⁷⁴ See Coval et al., *supra* note 13. See also Porras, *supra* note 13.

⁷⁵ See Coval et al., *supra* note 13 (detailing how small errors in the assumptions of securitization models can lead to large miscalculations of losses for asset-backed securities with these miscalculations compounded with every re-securitization of those securities); Porras, *supra* note 13; Gunter Löffler, *The Effects of Estimation Error on Measures of Portfolio Credit Risk*, 27 J. BANKING & FIN. 1427 (2003) (providing statistical analysis that shows how default correlations can lead to errors in estimating credit risk in investment portfolio); cf. Darrell Duffie et al., *Frailty Correlated Default* (Swiss Fin. Inst. Research, Working Paper No. 08-44, 2008), available at <http://www.finance.ox.ac.uk/NR/rdonlyres/CF97FD7F-2BFB-41CE-B99A-FF4DE0DEB9BB/0/DarrellDuffie.pdf> (finding that standard risk measurement methods severely underestimate probability of default losses on portfolios of U.S. corporate debt, including CDOs, because of hidden default correlations).

⁷⁶ Adrian M. Cowan & Charles D. Cowan, *Default Correlation: An Empirical Investigation of a Subprime Lender*, 28 J. BANKING & FIN. 753 (2004) (finding high default correlation in portfolio of single subprime lender studied).

faults among more creditworthy borrowers have a much lower correlation).⁷⁷

Correlation can also defeat diversification across an investor's portfolio. When different securities in an investor's portfolio (for example, different issuances of asset-backed securities) experience high—and highly correlated—losses, that investor may lurch towards sudden financial collapse.⁷⁸ If there is a high degree of correlation among the portfolios of large institutional investors, losses in one investment portfolio may presage market-wide losses,⁷⁹ which may cause many investors to sell assets, make margin calls, and cut lending simultaneously.

C. The Connection between Securitization and Subprime Lending

Scholars have argued that securitization triggered the growth of subprime mortgage lending (and other subprime consumer loans).⁸⁰ When lenders could sell the mortgages they originated, they no longer bore the full risk of borrower default and had less incentive to ensure that consumers could repay the mortgages.⁸¹ Indeed, many mortgage lenders lowered underwriting standards and extended so-called low documentation ("low doc") loans that did not require documentary proof of a borrower's employment or other important indicia of creditworthiness.⁸² Instead of ensur-

⁷⁷ David K. Musto & Nicholas S. Souleles, *A Portfolio View of Consumer Credit*, 53 J. MONETARY ECON. 59, 61-62 (2006) (positing that measuring default risk of consumer loans requires determining covariance with aggregate consumer default rates and finding that "consumers with high covariance risk tend to also have low credit scores (high default probabilities)").

⁷⁸ Insurers face a similar problem in ensuring that losses in their portfolio are not highly correlated. ZVI BODIE ET AL., *ESSENTIALS OF INVESTMENTS* 196 (Richard D. Irwin, 3d ed., 1998).

⁷⁹ See *supra* notes 14, 17 and accompanying text. See generally Martin Hellwig, *Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis* (Max Planck Inst. for Research on Collective Goods Preprint No. 2008/43, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1309442. Professor Hellwig analyzes in depth how correlations in various levels of a securitization—from default correlations among underlying loans to correlations in prices of asset-backed securities—can undermine diversification, lead to unexpectedly large losses for financial institutions, and thus exacerbate systemic risk. He analyzes how these various correlations frustrated risk modeling and contributed to the global financial crisis.

⁸⁰ See Kathleen C. Engel & Patricia A. McCoy, *Turning a Blind Eye: Wall Street Finance of Predatory Lending*, 75 FORDHAM L. REV. 2039 (2007); Christopher A. Peterson, *Predatory Structured Finance*, 28 CARDOZO L. REV. 2185 (2007).

⁸¹ Frederic S. Mishkin, Governor, Bd. of Governors of the Fed. Reserve System, On "Leveraged Losses: Lessons from the Mortgage Meltdown," Remarks at the U.S. Monetary Policy Forum, New York, N.Y. (Apr. 8, 2005), available at http://www.federalreserve.gov/newsevents/speech/mishkin_20080229a.htm (discussing incentive problems created by "originate-to-distribute" model).

⁸² Ann M. Burkhart, *Real Estate Practice in the Twenty-First Century*, 72 MO. L. REV. 1031, 1045-46 (2007); Alan N. Krinsman, *Subprime Mortgage Meltdown: How did it Happen and How will it End?*, 13 J. STRUCTURED FIN. 13 (2007) (presenting empirical data on low-documentation loans).

ing the creditworthiness of borrowers, lenders had an incentive to enter new markets, including the subprime market, to generate additional fees.⁸³

Fueled by securitization, the U.S. subprime mortgage market grew from miniscule levels to \$625 billion in 2005, when it represented one-fifth of total annual mortgage originations.⁸⁴ Economists have noted that the subprime mortgage market depended heavily on steady increases in home values, which enabled mortgage borrowers—who could not afford the higher interest rates when their ARM (or other exotic mortgage) reset—to either refinance or sell.⁸⁵ Housing prices did rise fairly sharply from 1999 to 2005, with the boom in the last several years fueled in particular by subprime lending.⁸⁶ Demand by investors for mortgage-backed securities spurred additional mortgage lending.⁸⁷ One group of economists describes the interplay of securitization and subprime mortgage lending as a feedback loop that created a housing bubble. They write:

A critical factor in the bubble was the interaction of financial engineering and deteriorating lending standards in real-estate markets, which fed on each other to cause unsustainable price rises, and then collapse. Financial market expansion and innovation provided new funding sources and a demand for mortgages for securitization. This required the easing of lending standards, which drove prices up. The soaring housing prices were both an effect and a cause of too much easing as the price rises supported the continued undermining of lending standards.⁸⁸

⁸³ Engel & McCoy, *supra* note 80; Bar-Gill, *supra* note 53. Benjamin J. Keys, et al., *Did Securitization Lead to Lax Screening? Evidence from Subprime Loans* (EFA 2008 Athens Meetings Paper, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1093137 (concluding securitization did lead to deterioration in credit screening).

⁸⁴ Gregory A. Krohn & William R. Gruver, *The Complexities of the Financial Turmoil of 2007 and 2008* 9, (Oct. 7, 2008) (unpublished manuscript available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1282250&rec=1&srcabs=1273467).

⁸⁵ Gorton, *supra* note 51, at 5-6. See also Michel G. Crouhy et al., *The Subprime Credit Crisis of 07*, (July 9, 2008) (unpublished manuscript available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1112467&rec=1&srcabs=1072304).

⁸⁶ Krohn & Gruver, *supra* note 84. Some economists see housing price increases as driven by a feedback loop that is psychological. See Robert J. Shiller, *Understanding Recent Trends in House Prices and Home Ownership* (Yale Econ. Dep't Working Paper No. 28, 2007), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1017546 (describing evidence that housing price increase stemmed from psychological feedback mechanism; increasing asset prices lured investors and drove a speculative bubble).

⁸⁷ Krohn & Gruver, *supra* note 84 (describing “shadow banking” system of securitization investors funding and driving subprime mortgage lending by non-banks); Engel & McCoy, *supra* note 80, at 137 (citing reports that excess demand by investors for asset-backed securities led to additional subprime securitizations and lax diligence by investors of credit risk).

⁸⁸ Susan M. Wachter et al., *Subprime Lending and Real Estate Markets*, in *MORTGAGE & REAL ESTATE FIN.* (Stefania Perrucci ed., 2008). But see Geetesh Bhardwaj & Rajdeep Sengupta, *Where's the Smoking Gun? A Study of Underwriting Standards for US Subprime Mortgages* (Fed. Reserve Bank of

The rapid growth of the subprime mortgage market coincided with consolidation of market share among lenders.⁸⁹ One study found a correlation in subprime markets between increases in competition among lenders and decreases in underwriting standards.⁹⁰ As underwriting standards declined, subprime mortgage lenders were increasingly making the same types of riskier loans; from 2001 to 2006, the percentage of subprime mortgage originations that constituted:

- Low-documentation (or no-documentation) loans increased from 28.5% to 50.8%;
- ARMs jumped from 73.8% to 91.3%;
- Interest-only mortgages increased from 0% to 22.8%.⁹¹

Together, these trends indicate that lenders were making the same types of loans in the same markets and simultaneously lowering underwriting standards. This correlation of lending practices may explain (or exacerbate) the default correlations that studies have found in subprime loan portfolios.⁹² Again, high default correlations in underlying mortgage loans can translate into unexpectedly and significantly higher defaults in securities backed by those loans.⁹³

D. The Crisis Spreads

The current financial crisis exposed the dangers in these assumptions. The crisis has numerous causes and has unfolded (and continues to unfold) in incredibly complex ways that will occupy economists for decades. The following paragraphs present merely a thumbnail sketch of the crisis to highlight how consumer mortgage defaults threatened the safety of financial institutions and created massive systemic risk.

The subprime crisis began in 2007, when defaults on ARMs began rising as teaser rates on ARMs expired and many subprime borrowers were unable to make payments at the higher reset rate.⁹⁴ Rising market interest

St. Louis, Working Paper No. 2008-036A, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1286106 (finding no deterioration of lending standards after 2004).

⁸⁹ Chomsisengphet & Pennington-Cross, *supra* note 29, at 40.

⁹⁰ Giovanni Dell'Ariccia et al., *Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market* (Ctr. for Econ. Pol'y Research, Discussion Paper No. DP6683, 2008), available at <http://www.bis.org/bcbs/events/rftf08rtmfs/aricciaiganlaeven.pdf>.

⁹¹ Jennifer E. Bethel et al., *Law and Economic Issues in Subprime Litigation* (Harvard Law School, John M. Olin Ctr. for Law, Econ., and Bus., Discussion Paper No. 612, 2008), available at http://www.law.harvard.edu/programs/olin_center/papers/pdf/Ferrell_et_al_612.pdf.

⁹² See *supra* notes 13, 76, 77 and accompanying text.

⁹³ *Supra* notes 13, 74, 75, 78 and accompanying text.

⁹⁴ Gretchen Morgenson, *Home Loans: A Nightmare Grows Darker*, N.Y. TIMES, Apr. 8, 2007, at C1.

rates cut off the exit options for borrowers by both making refinancing prohibitively expensive and drying up the resale market; home prices began to level or drop in many markets after years of continuous gains.⁹⁵ Waves of defaults by mortgage borrowers followed.⁹⁶

The wave of defaults swelled enough to affect even senior classes of mortgage-backed securities.⁹⁷ Defaults on asset-backed securities triggered guarantees and credit insurance policies, and unprepared guarantors and credit insurers themselves threatened to falter.⁹⁸

Growing losses for financial institutions on mortgages and mortgaged-backed securities created two aftershocks. First, lenders cut back on mortgage and other lending, which drove market interest rates higher and started a credit crunch. Higher interest rates created a feedback loop and worsened default rates on ARMs.⁹⁹

Second, the plummeting of the value of asset-backed securities forced many financial institutions to make substantial write-downs of assets on their balance sheets, a process that still continues.¹⁰⁰ Yet the value of many of these assets became extremely uncertain, as buyers for asset-backed securities disappeared.¹⁰¹ In addition, the iteration of securitization upon securitization meant that the default of one class of securitization cascaded and caused losses in subsequent securitizations. But, the many layers of securitization—CDOs backed by CDOs in an iterative chain—prevented investors later in the securitization chain from calculating the risk they faced from losses on assets earlier in the chain.¹⁰²

⁹⁵ *Id.*; see also Jia Lynn Yang, *How Bad is the Mortgage Crisis Going to Get?*, CNNMONEY.COM, Mar. 17, 2008, available at http://money.cnn.com/2008/03/14/news/economy/krugman_subprime.fortune/index.htm.

⁹⁶ Roger Lowenstein, *Triple-A Failure*, N.Y. TIMES, Apr. 27, 2008, (Magazine), at 36.

⁹⁷ Robert Stowe, *Anatomy of a Meltdown*, 68 MORTGAGE BANKING 38 (Oct. 1, 2007), available at 2007 WLNR 21537515; Greg B. Cioffi, *Collateralized Damage*, DAILY DEAL, Feb 1, 2008, available at 2008 WLNR 1910083.

⁹⁸ Vikas Bajaj & Julie Creswell, *Bond Insurer in Turmoil Turns to Familiar Lender*, N.Y. TIMES, Feb. 20, 2008, at C2.

⁹⁹ Shawn Tully, *Risk Returns with a Vengeance*, FORTUNE, Sept. 3, 2007, at 50.

¹⁰⁰ Charles Duhigg, *A Trickle that Turned into a Torrent*, N.Y. TIMES, July 11, 2008, at C1 (reporting that major banks are writing down 20% to 50% of the value of their assets due to losses from mortgage-backed securities).

¹⁰¹ Louise Story, *A Values Debate (Not the Political Kind)*, N.Y. TIMES, May 16, 2008, at C1 (reporting on debate over whether mark to market rule in Financial Accounting Statement 157 was leading to overstated write downs); see also Andrew Ross Sorkin, *Are Bear Counters to Blame?*, N.Y. TIMES, July 1, 2008, at C1.

¹⁰² Matthew Goldstein & David Henry, *Bear Bets Wrong*, BUSINESS WEEK, Oct. 22, 2007, at 50 (linking Bear Stearn's deteriorating credit situation to the decline in value of "CDO squared" securities it held).

The write-down of assets began to affect the creditworthiness, real and perceived, of many institutional investors.¹⁰³ Many investors were forced to sell asset-backed securities to improve their balance sheets,¹⁰⁴ but they faced a liquidity risk problem similar to that of holders of mortgages; the initial depression of prices of asset-backed securities, combined with the volume of sellers in the market in the same predicament, sent the prices of these securities into a tailspin and dried up liquidity.¹⁰⁵

Creditors, including stock lending and derivative counter-parties, began worrying about the credit risk posed by many institutions and made margin calls.¹⁰⁶ Many large commercial and investment banks were forced to seek emergency equity infusions to shore up their balance sheets, reassure creditors, and meet regulatory capital requirements.¹⁰⁷

A few prominent institutions failed in attempts to stay afloat.¹⁰⁸ Threats to the solvency of financial institutions and hedge funds created fears of systemic risk due to domino effects. The failure of one firm could trigger the collapse of other institutions because of the complex web of counter-party risk created by derivatives.¹⁰⁹ Even perceived risk posed a threat; the contagion of depositor or creditor panic further exacerbated systemic risk.¹¹⁰ The failure or threat of failure to these large institutions prompted extraordinary federal intervention into financial markets.

IV. MITIGATING SYSTEMIC RISK THROUGH CONSUMER PROTECTION

A. Enlisting Consumer Protection as a Tool for Mitigating Systemic Risk

Consumer loans drove securitization and consumer defaults drove the financial crisis. Part III provides a sketch of the chain that connected defaults on consumer mortgages with the collapse of major financial institu-

¹⁰³ Landon Thomas, Jr., *Run on Big Wall St. Bank Spurs U.S.-Backed Rescue*, N.Y. TIMES, Mar. 15, 2008, at A1 (describing contagious loss of investor and creditor confidence in U.S. investment banks).

¹⁰⁴ Liz Rappaport & Justin Lahart, *Debt Reckoning: U.S. Receives a Margin Call*, WALL. ST. J., Mar. 15, 2008, at A1.

¹⁰⁵ E.g., Jenny Anderson, *Hedge Funds Are Squeezed By Investors and Lenders*, N.Y. TIMES, Aug. 20, 2007 at C1.

¹⁰⁶ *Id.*

¹⁰⁷ E.g., David Jolly, *After Losses, UBS Seeks to Raise \$15 Billion*, N.Y. TIMES, May 23, 2008 at C5; Eric Dash, *IndyMac Announces It Will Close Lending Units and Cut Half of Its Work Force*, N.Y. TIMES, July 9, 2008, at C3.

¹⁰⁸ Goldstein & Henry, *supra* note 102 (reporting on bailout of Bear Stearns); Dash, *supra* note 107 (reporting on insolvency of IndyMac Bank).

¹⁰⁹ Richard Herring & Til Schuermann, *Capital Regulation for Position Risk in Banks, Securities Firms, and Insurance Companies*, in CAPITAL ADEQUACY BEYOND BASEL 15, 22 (Hal S. Scott ed., 2005) (discussing systemic risk threat posed by securities firms by virtue of OTC derivatives activity).

¹¹⁰ Vikas Bajaj & Julie Creswell, *Bear Stearns Staves Off Collapse of 2 Hedge Funds*, N.Y. TIMES, June 21, 2007, at C1 (reporting that potential failure of Bear Stearns hedge fund raised investor concerns over systemic risk).

tions and threats to global financial markets. This chain also underscores how adequate consumer financial laws can protect not only consumers from excessive risk, but markets from excessive systemic risk as well. Had consumers been restricted to mortgages that they could have afforded, the financial crisis may have been less severe or perhaps would never have started. Mitigating systemic risk adds an altogether different justification for strong consumer financial laws and vigorous enforcement of those laws. Consumer financial protection is thus not only about protecting unsophisticated individuals—the proverbial “widows and orphans”—from risky loans, but about protecting financial markets as well.¹¹¹

Consumer financial laws can address systemic risk by working at either end of the securitization chain. Most directly, regulations can address the practices of lenders by requiring better disclosure to consumers, prohibiting certain loan terms, or addressing underwriting standards.¹¹² But, as several legal scholars have noted, consumer protection can also be achieved by addressing the demand for asset-backed securities by investors.¹¹³ For example, a legal rule that restricted financial institutions from purchasing securities backed by mortgages with a high risk of default would dry up the capital that fed exotic, excessively risky, and exploitative mortgages.

B. The Costs and Tensions of Reorienting Consumer Financial Protection

A detailed proposal for new consumer financial laws is beyond the scope of this Article (Part IV.F sketches one suggestion). Nonetheless, it is important to note that strengthening consumer financial protection laws may come at a cost. Protecting consumers (and financial markets) from risky loans is in tension with other objectives of consumer and other financial regulation. Most obviously, stronger consumer financial protection may reduce consumer access to credit.¹¹⁴

¹¹¹ U.S. bank regulators seem to be very tentatively recognizing the connection between consumer protection and safety-and-soundness. Notably, in 2006, the Federal Reserve and other federal bank regulators issued guidance that suggested to financial institutions that they both make enhanced disclosures to consumers who borrow under exotic mortgages and adopt enhanced underwriting standards for such mortgages. These recommendations were based on both consumer protection and safety-and-soundness objectives. See Office of the Comptroller of the Currency et al., Interagency Guidance on Nontraditional Mortgage Product Risks, 71 Fed. Reg. 58, 609 (Oct. 4, 2006). However, this guidance was non-binding.

¹¹² See *id.* In other words, regulators could clarify and strengthen the standards in the Interagency Guidance on Nontraditional Mortgage Product Risks and make them binding.

¹¹³ See Engel & McCoy, *supra* note 80; Peterson, *supra* note 80.

¹¹⁴ Gregory Elliehausen & Michael Staten, *Regulation of Subprime Mortgage Products: An Analysis of North Carolina's Predatory Lending Law*, 29 J. REAL ESTATE FIN. & ECON. 411 (2004) (finding a 1999 North Carolina statute prohibiting certain “predatory” mortgages caused lenders to sharply restrict lending to high risk borrowers and arguing against this restricted access to credit).

Second, as noted above, stronger consumer protection may reduce the profitability of financial institutions.¹¹⁵ Thus, muscular consumer financial protection laws may have some theoretical adverse long-term consequences for systemic risk. In addition, if consumer protection laws would drive financial institutions out of a broad class of investments, they might also undermine diversification by those institutions. Yet, it is also important to reiterate that the threat of consumer financial protection laws to the safety and soundness of financial institutions remains largely theoretical; there is scant, hard, empirical evidence that consumer financial protection regulations increase systemic risk.

Nevertheless, reorienting consumer financial laws to protect financial markets from systemic risk may not mesh completely with the traditional objective of protecting consumers. Mitigating systemic risk might not necessarily equate with lowering consumer defaults, but instead might focus on the narrower goals of making defaults more predictable by financial institutions and less correlated.¹¹⁶

C. Alternative Explanations: What If Financial Institutions Had Greater Information on the Risk of Consumer Default?

This raises the question of whether strengthened consumer financial protection is necessary to prevent a recurrence of the financial crisis. Would financial institutions be able to mitigate the risk they face from loans that pose excessive risks to consumers merely by having better quality information on those loans?¹¹⁷

Questions remain as to whether information alone would cause these investors to refrain from purchasing excessively risky securities backed by consumer debt. Scholars have argued that managers at institutional investors took on excessive risk with these securities because of misaligned incentives between these managers and the institution's shareholders and creditors; poorly designed executive compensation figures prominently in this explanation.¹¹⁸ Executives at financial institutions may have faced

¹¹⁵ Levitin, *supra* notes 9, 43, 44 and accompanying text. This tension mirrors a conundrum that dogs various potential regulatory responses to the crisis; regulatory measures needed to ensure that the crisis does not recur are in tension with crisis management and policies that promote the viability of financial institution in the short-term.

¹¹⁶ *Cf.* notes 12-16 and accompanying text.

¹¹⁷ The global financial crisis stemmed from multiple failures of markets and regulations; one alternative policy prescription—that investors in securitizations primarily need better information about the risks associated with assets underlying securities—has gained particular traction among policymakers and scholars. For example, many proposals focus on improving the quality of rating agency ratings. See, e.g., Jeffrey Manns, *Rating Risk after the Subprime Mortgage Crisis: A User Fee Approach for Rating Agency Accountability*, __ N.C. L. REV. __ (forthcoming 2009).

¹¹⁸ See Executive Compensation II: CEO Pay and the Mortgage Crisis: Hearing Before the H. Comm. on Oversight and Government Reform, 110th Cong. (Mar. 7 2008) (Testimony of Dr. Susan M.

some pressure not to resist the herd mentality of financial institutions that drove asset-backed security prices higher;¹¹⁹ it is a career risk to bet against a bubble. In addition, even executives and sophisticated traders at financial institutions may be subject to the same types of behavioral biases that afflict consumers.¹²⁰

The preceding paragraph suggested that agency costs and behavioral biases may combine to induce individuals at financial institutions to invest in risky consumer debt even when they are armed with better information on the risks involved. This argues that consumer financial laws may play a necessary role in mitigating systemic risk by restricting consumer lending practices that lead to excessive and highly correlated consumer defaults.

D. “Predatory Lending” as a Commons Problem and Anti-coordination Game

There is an alternative economic justification for consumer financial laws that address systemic risk, which is based on the logic of collective action. Each consumer lender, on its own, lacks sufficient incentives and ability to curtail lending practices that may exacerbate systemic risk. Each lender has an incentive to maximize returns from its consumer borrowers and may be punished with lower market share for doing so. But, these lending practices, when adopted by many lenders in the market, can lead to unpredictable, high, and highly correlated defaults by consumers. As noted above, waves of consumer defaults can threaten financial markets.¹²¹ This represents a classic collective action failure characterized by lenders that neither bear the full cost of their actions (*i.e.*, their lending practices have negative externalities) nor are able to coordinate their actions with other lenders to refrain collectively from lending practices.¹²² The following paragraphs present several versions of these problems.

Wachter, Richard B. Worley Professor of Financial Management, Professor of Real Estate and Finance, The Wharton School, University of Pennsylvania), available at <http://oversight.house.gov/documents/20080307103022.pdf>.

¹¹⁹ See Markus K. Brunnermeier, *Deciphering the 2007-08 Liquidity and Credit Crunch*, 23 J. ECON. PERSP. 77 (2009). Professor Brunnermeier cites the now infamous quote by Citigroup CEO Charles Prince: “When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you’ve got to get up and dance. We’re still dancing.”

¹²⁰ See, e.g., Robert A. Olsen, *Implications of Herding Behavior for Earnings Estimation, Risk Assessment, and Stock Returns*, 52 FIN. ANALYSTS J. 37 (1996) (finding that expert financial analysts engage in herding).

¹²¹ *Supra* notes 12-17 and accompanying text.

¹²² Professor Schwarcz has characterized all efforts to mitigate systemic risk as a “commons problem.” Schwarcz, *supra* note 8.

Consumer Wealth as Commons

Each individual consumer represents a potential source of revenue for multiple lenders and, thus, resembles a classic commons. Each lender can exploit the consumer and extract additional revenue, but the combination of several exploitative loans may cause the consumer to default. Of course, lenders can protect themselves before extending a loan by examining the credit report of a borrower. Credit reports typically contain information on the identity of other lenders, amount borrowed and payment history.¹²³ But, they lack detailed information on the terms of outstanding loans, and, as consumer law scholars have noted, the devil is in those details. Consumer loan contracts can contain complicated interest rates, penalties or fee provisions that could increase a consumer's risk of default and, in severe cases, becoming insolvent.¹²⁴ But, the complex and often bespoke nature of these contractual provisions would frustrate including information on them in a standard credit report. One solution for this critical gap in information, which might be called the "consumer loan terms information gap," is discussed below in Part IV.F.

Correlated Consumer Loan Practices and Correlated Consumer Defaults

Lenders face a collective action problem not only with respect to individual borrowers, but also with respect to groups of borrowers in the market. Lenders face a strong incentive to mimic lucrative lending practices—from types of mortgages to specific provisions in a credit card contract—that other lenders have used to extract value from consumers.¹²⁵ But, when practices of different lenders become highly correlated across the marketplace, consumer defaults may become highly correlated as well, exacerbating systemic risk.¹²⁶

¹²³ Robert B. Avery, *Credit Report Accuracy and Access to Credit*, FED. RES. BULL. 297 (Summer 2004) (detailing contents of consumer credit report), available at http://www.federalreserve.gov/pubs/bulletin/2004/summer04_credit.pdf.

¹²⁴ E.g. Bar-Gill & Warren, *supra* note 1.

¹²⁵ *Supra* notes 90-92 and accompanying text. See Martin Neil Baily, The Origins of the Financial Crisis, Initiative on Business & Public Policy at Brookings, Fixing Finance Series Paper 3 (Nov. 2008), available at http://www.brookings.edu/~media/Files/rc/papers/2008/11_origins_crisis_baily_litan/11_origins_crisis_baily_litan.pdf (positing a theory of mortgage originator behavior based on information cascades and bubble dynamics). The authors of this Brookings study elaborate on how mortgage originators and other actors in the mortgage markets may have engaged in herd behavior.

In a marketplace where individuals observe the actions of others, herding behavior may trump the judgment of rational individuals. This kind of "social contagion" can go a long way in describing how homeowners, mortgage originators, holders of mortgage-backed securities, regulators, ratings agencies—indeed everyone—could get swept up in a bubble that *ex post* was clearly bound to burst.

Id. Cf. Raghuram G. Rajan, *Why Credit Policies Fluctuate: A Theory and Some Evidence*, 109 Q. J. ECON. 399-442 (1994) (presenting evidence of herding in bank lending standards).

¹²⁶ *Supra* notes 90-93 and accompanying text.

ARMs and other exotic mortgages in the subprime provide a stark example of correlated lending practices leading to correlated defaults. The unfolding of the subprime crisis described in Part III.D above also demonstrates how consumer defaults can become even more highly correlated through spillover effects and feedback loops. Spillover effects occur when the default on one consumer loan creates direct, negative externalities that increase the probability that other consumers will also default.¹²⁷ For example, data shows that a foreclosed house lowers the value of other houses in the neighborhood.¹²⁸ A precipitous drop in home value below the value of mortgages may induce other mortgage borrowers to default. Feedback loops occur when consumer defaults trigger a series of events that can indirectly lead to a subsequent wave of defaults. Part III.D gives the example of ARM defaults caused by rising interest rates, which leads to losses by financial institutions, who cut back lending, which leads to higher interest rates, which can lead to a new round of ARM defaults. The complexity of the terms of these consumer mortgages (in addition to the complexity caused by securitization) combined with these spillover effects and feedback loops makes modeling the risks posed by consumer loans extremely difficult.¹²⁹

Consumer Unpredictability and Behavioral Biases

Modeling and measuring the risks to financial institutions of consumer loans faces further complications due to the behavioral biases of consumers.¹³⁰ To the extent that these behavioral biases play a significant role in consumer borrowing decisions, they also frustrate the ability of financial institutions to predict consumer behavior, including consumer defaults. Behavioral economics has faced a trenchant criticism, most prominently articulated in the legal literature by Professor Gregory Mitchell,¹³¹ that behavioral economics presents general tendencies, but has yet to delineate the boundaries of those tendencies.¹³² In other words, behavioral economics

¹²⁷ For a lengthy discussion of the spillover effects that might lead to a high degree of correlation among consumer defaults and defaults on asset-backed securities, see Hellwig, *supra* note 79.

¹²⁸ Adam Levitin, *Resolving the Foreclosure Crisis: Modification of Mortgages in Bankruptcy*, 2009 WIS. L. REV. __ (forthcoming 2009).

¹²⁹ Gerding, *supra* note 12.

¹³⁰ *Supra* notes 60-62 and accompanying text.

¹³¹ See Gregory Mitchell, *Tendencies versus Boundaries: Levels of Generality in Behavioral Law and Economics*, 56 VAND. L. REV. 1781 (2003) (arguing that behavioral law and economics proponents have documented “tendencies” in behavioral biases, but has yet to specify the “boundaries” of those tendencies, *i.e.* when, and the extent to which, these biases come into play). See also Richard A. Posner, *Rational Choice, Behavioral Economics and the Law*, 50 STAN. L. REV. 1551, 1559-60 (1998) (faulting behavioral law and economics scholars for failing to offer a theory capable of generating testable predictions that would rival the predictive power of rational-choice economics).

¹³² Mitchell, *supra* note 131, at 1804-11.

produces evidence that behavioral biases occur, but has not specified when those biases occur.¹³³ This failure to specify boundary conditions means that behavioral economics struggles to produce models of human behavior that can lead to testable predictions.¹³⁴

This criticism applies not only to the modeling of behavioral economics scholars, but to the modeling used by financial institutions to predict consumer and investor behavior, as well. Prediction of human behavior by financial institutions is frustrated by the lack of defined boundaries to behavioral biases. This lack of definition obscures the thresholds and magnitude of the effects of behavioral biases. Thus, the higher the probability that a behavioral bias will be salient in a given context, the more uncertainty it adds to predictions by financial institutions of consumer behavior.¹³⁵

In fact, evidence from the subprime crisis suggests that even originating mortgage lenders struggled to predict consumer defaults. Insolvencies and severe losses by mortgage lenders on mortgages that they retained or were unable to offload quickly enough¹³⁶ suggest that mortgage originators severely miscalculated the level and timing of consumer defaults.

The Shape of Consumer Financial Protection: "Menu Design", Standardization, and Systemic Risk

Scholars have proposed different policies to mitigate the risk that behavioral biases will lead consumers to unwise decisions. A full discussion of potential changes to consumer lending laws is beyond the scope of this paper. Nevertheless, one approach to addressing consumer behavioral biases might prove particularly effective in also addressing systemic risk. Scholars have proposed rules to that address the design of "menus" of contractual choices available to consumers.¹³⁷ These rules would not necessarily prevent consumers from entering into unfavorable transactions. Instead, menu design proposals focus on how information is presented to individuals.¹³⁸ This could be combined with crafted default rules (including carefully selected opt-in and opt-out provisions) that would counteract or harness the behavioral biases of consumers.¹³⁹ Better menu design would dissuade consumers from agreeing to loan provisions that pose excessive risk. By

¹³³ *Id.*

¹³⁴ Gregory Mitchell, *Why Law and Economics' Perfect Rationality Should Not be Traded for Behavioral Law and Economics' Equal Incompetence*, 91 GEO. L.J. 67, 122-23 (2002).

¹³⁵ Gerding, *supra* note 12.

¹³⁶ John Kiff & Paul S. Mills, *Money for Nothing and Checks for Free: Recent Developments in U.S. Subprime Mortgage Markets*, (Int'l Monetary Fund, Working Paper 07-188, 2007, available at <http://www.imf.org/external/pubs/ft/wp/2007/wp07188.pdf>).

¹³⁷ Ian Ayres, *Menus Matter*, 3 U. CHI. L. REV. 73 (2006).

¹³⁸ *Id.*

¹³⁹ Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism is not an Oxymoron*, 70 U. CHI. L. REV. 1159 (2003).

lowering the risk of unpredictable and highly correlated consumer default, these provisions would also mitigate systemic risk.

Menu-design proposals would have another benefit for addressing systemic risk by encouraging more standardization in consumer loan contracts. Greater standardization would address the “consumer loan terms information gap” mentioned above. Again, lenders considering extending a loan to a consumer may be concerned that the consumer’s existing loan contracts may contain complex, fine print provisions that increase the risk of the borrower defaulting on multiple loans. Standardization would provide a way of categorizing these provisions so that they could appear on more nuanced credit reports.

V. INSTITUTIONAL IMPLICATIONS: THE REDESIGN OF THE FINANCIAL REGULATORY FRAMEWORK

Beyond substantive reform of specific laws, the link between consumer financial protection and systemic risk also has important implications for the current debate on redesigning the institutional framework for financial regulation in the United States (as well as in other countries). The global financial crisis has sparked calls for dramatically reorganizing the responsibilities of financial regulators. Scholars and policymakers have called variously for a single financial regulator or for a new financial regulator that would oversee all systemic risk regulation.¹⁴⁰ Alternatively, the “Twin Peaks” model would split regulatory responsibility in two;¹⁴¹ a consumer regulator would oversee consumer financial protection¹⁴² and a separate regulator would address the safety and soundness.¹⁴³

Arguments for the Twin Peaks model and against a single financial regulator include that the consumer financial protection and systemic risk regulation are missions that require different expertise.¹⁴⁴ Moreover, placing these two missions under the same regulatory umbrella might allow the agency to bow to political pressure and subtly favor one mission over the

¹⁴⁰ See Editorial, *It's the Regulations, Not the Regulator*, N.Y. TIMES, Mar. 18, 2009, at A30 (criticizing calls for single financial regulator or systemic risk regulator).

¹⁴¹ See Eddy Wymeersch, *The Structure of Financial Supervision in Europe: About Single Financial Supervisors, Twin Peaks and Multiple Financial Supervisors*, 8 EUR. BUS. ORG. L. REV. 237 (2007) (surveying European nation approaches to division of financial regulatory authority).

¹⁴² For scholarly proposals for the creation of a federal regulator with consolidated responsibility for consumer financial protection, see Bar-Gill & Warren, *supra* note 1; Heidi Mandanis Schooner, *Structuring the Federal Response to Abuses in Consumer Credit*, 18 LOY. CONSUMER L. REV. 43 (2005).

¹⁴³ A third alternative would be to have three regulators: one responsible for stability of financial markets, a second responsible for prudential regulation, and a third for business conduct of financial firms (including consumer protection). U.S. DEP'T OF THE TREASURY, BLUEPRINT OF A MODERNIZED FINANCIAL REGULATORY STRUCTURE 137 (Mar. 2008).

¹⁴⁴ For a policy analysis of the tradeoffs among the Twin Peaks, single regulator and functional regulatory models, see Eric J. Pan, *Structural Reform of Financial Regulation: The Case of Canada*, Cardozo Legal Studies Research Paper No. 250 (Jan. 2009).

other. As Professor Levitin notes, public choice theory suggests that consumer financial protection is likely to end up on the losing side of that fight. When conflicts arise on a consumer protection regulation, a smaller number of financial institutions with a high stake in lower regulation would exercise more political muscle than a diffuse band of less-informed and less-organized consumers.¹⁴⁵

The connections explored in this Article between consumer financial protection and systemic risk demonstrate the need, at the very least, for heavy coordination between a consumer financial regulator and a systemic risk regulator. But, public choice theory again suggests that the consumer financial regulator may lose in the inevitable interagency conflicts or otherwise be hobbled in carrying out its mission. A systemic risk regulator may miss the connections between consumer protection and systemic risk. This argues for statutory provisions that give extra weight to consumer financial protection regulations vis-à-vis perceived conflicts with safety and soundness regulations.

Yet, there are problems with the larger project of consolidating financial regulation into one, two, or a few neat organizational boxes. The remaining paragraphs of this Article sketch out a few arguments that may run counter to prevailing wisdom on ways to clear the current thicket of financial regulations.

A. Virtues of Regulatory Diversity

As noted above, high correlations in consumer lending practices create a risk of high correlations in consumer defaults.¹⁴⁶ Similarly, high correlations in the investment portfolios of financial institutions create the risk of market disruptions generating market-wide sell-offs.¹⁴⁷ Correlations in the behavior of financial institutions thus exacerbate systemic risk.

Ensuring that different financial institutions are subject to different regulatory regimes can break down these correlations in financial institution behavior. However, building diversity into regulation requires a holistic approach, not least because the ability of financial institutions to engage in regulatory arbitrage—for example, by choosing their regulator or regulatory regime—could undermine the objective of diversity.¹⁴⁸ Financial institutions may flock to one regulatory regime (perhaps the most permissive or perhaps the most “efficient”). Regulators may adopt similar regulatory approaches in order to compete with one another. Even if regulatory diver-

¹⁴⁵ Levitin, *supra* note 9.

¹⁴⁶ See *supra* notes 74-78 and accompanying text.

¹⁴⁷ See *supra* note 79 and accompanying text.

¹⁴⁸ *E.g.*, *supra* notes 26-27 and accompanying text (discussing ability of national banks to export home state usury laws).

sity is hardwired into the system, the free flow of capital might mean that capital and risk might still remain concentrated in a few firms or in a few regulatory regimes. In short, breaking the correlation of financial institution practices with regulatory diversity presents challenges.

B. Virtues of Regulatory Redundancy

The calls, particularly in the United States for pruning the thicket of financial regulators and financial regulators, may ignore the value of some level of redundancy among regulations and among regulators. If there is only one regulator responsible for protecting consumers or mitigating systemic risk, a failure by that regulator, whether due to incompetence or regulatory capture, would prove catastrophic. Engineers build some level of redundancy into any critical architecture, be it a bridge or an information technology system.¹⁴⁹

Of course, excessive redundancy in the financial regulatory architecture entails serious costs, including the costs mentioned in Part IV.B above (e.g., lower consumer access to credit and higher burdens on financial institutions). But, leaving a single regulatory line of defense to systemic risk can prove even more costly, particularly if the threat takes a non-obvious path, such as the paths this Article outlines between consumer defaults to systemic risk.

C. Arguments Against Preemption

The preceding paragraphs discuss the virtues of regulatory diversity and regulatory redundancy in a theoretical context. But, they can have more immediate and concrete applications. For example, these virtues argue for giving both consumer regulators and systemic risk regulators overlapping responsibility for regulating lending practices that might transfer excessive risk to consumers. These two virtues also argue for a continued role of state consumer financial regulations in addition to federal regulation and against blanket federal preemption of state consumer law.¹⁵⁰

VI. CONCLUSION

The subprime crisis has demonstrated the need to see protection of consumers from excessively risky credit products as a fundamental tool for mitigating systemic risk. This additional role for consumer protection adds to the quiver of policymakers, scholars, and advocates who have been concerned with diluted and under-enforced consumer financial laws.

¹⁴⁹ See, e.g., ROY BILLINTON & RONALD N. ALLAN, *RELIABILITY EVALUATION OF ENGINEERING SYSTEMS: CONCEPTS AND TECHNIQUES* 85-86 (1992) (analyzing reliability of parallel systems).

¹⁵⁰ See *supra* notes 25-29, 46-50 and accompanying text.

This Article attempted merely to sketch the connection between consumer protection and systemic risk and begin to draw out some of the substantive and institutional regulatory implications of this connection. But, several key avenues for research remain, including the following:

- Providing more empirical evidence of correlations among subprime lending products and practices in the last 15 years;
- Considering whether ongoing consolidation in the financial sector will further increase correlations in consumer defaults;
- Investigating consumer default correlations and their causes, particularly during the subprime crisis;
- Fleshing out how menu-design and a default rule may address behavioral biases in consumer credit decisions, make consumer behavior more predictable, and protect consumers; and
- Analyzing whether particular state laws were effective in reducing consumer defaults in subprime markets or making defaults less correlated.